

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
9 June 2005 (09.06.2005)

PCT

(10) International Publication Number
WO 2005/052509 A1

(51) International Patent Classification⁷: **G01B 15/02**,
G06M 9/00

(21) International Application Number:
PCT/JP2004/017670

(22) International Filing Date:
22 November 2004 (22.11.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
2003-393248 25 November 2003 (25.11.2003) JP

(71) Applicant (for all designated States except US): **CANON
KABUSHIKI KAISHA** [JP/JP]; 3-30-2, Shimomaruko,
Ohta-ku, Tokyo 146-8501 (JP).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **MIYAZAKI,**

Jungo [JP/JP]; c/o Canon Kabushiki Kaisha, 3-30-2,
Shimomaruko, Ohta-ku, Tokyo 146-8501 (JP). **OUCHI,**
Toshihiko [JP/JP]; c/o Canon Kabushiki Kaisha, 3-30-2,
Shimomaruko, Ohta-ku, Tokyo 146-8501 (JP).

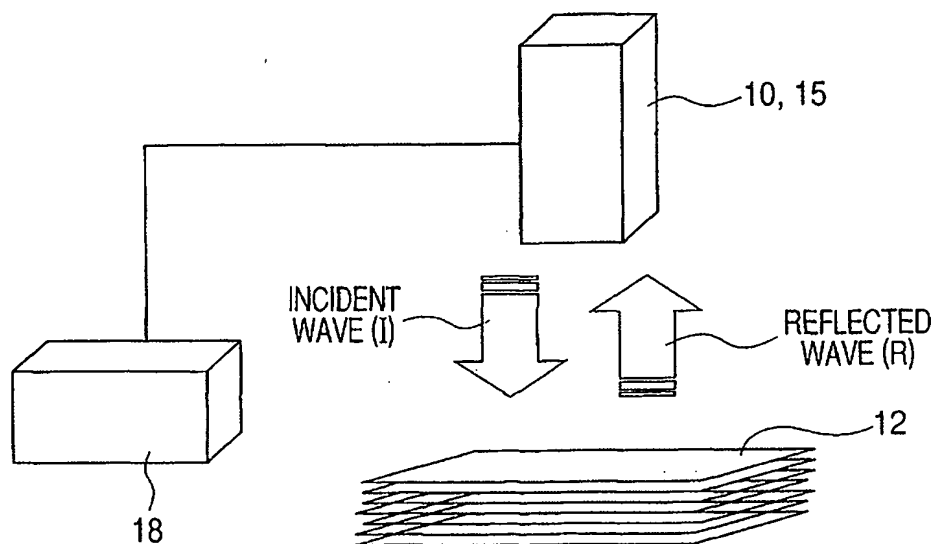
(74) Agents: **OKABE,** Masao et al.; No. 602, Fuji Bldg., 2-3,
Marunouchi 3-chome, Chiyoda-ku, Tokyo 100-0005 (JP).

(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG,
KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG,
MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH,
PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN,
TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,
GM, KE, LS, MW, MZ, NA, SD, SI, SZ, TZ, UG, ZM,
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,
FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE,

[Continued on next page]

(54) Title: SYSTEM AND METHOD FOR COUNTING THE NUMBER OF LAYERS OF A MULTILAYER OBJECT BY
MEANS OF ELECTROMAGNETIC WAVES



(57) Abstract: A system or method is adapted for counting the number of layers of a multilayer object such as a stack of paper. An electromagnetic wave is caused to strike the surface of the multilayer object. Signals of the waves generated by reflection at the respective interfaces of the layers are evaluated to count the number of layers. Alternatively, the phase of the electromagnetic wave transmitted through the multilayer object, is evaluated to determine the number of layers. It is proposed to use frequencies from 30 GHz to 100 THz, i.e. microwaves, millimeter waves and infrared waves.